

**RESPONSES TO RECOMMENDATIONS  
FROM THE  
CITY OF WESTMINSTER  
ON THE  
DRAFT PROPOSED ACTION MEMORANDUM  
FOR THE  
SOURCE REMOVAL AT TRENCH 1, IHSS 108**

**Recommendation #1:**

On September 24, 1996, the Site Technology Coordination Group (STCG) received a future technology needs for site cleanup document. A method for "Safe Excavation of Buried Drums Containing Unoxidized Depleted Uranium Chips" was listed as a technology need in the Environmental Restoration Program. The document stated that "Methods to safely excavate the chips are not known." The excavation was listed as representing a "high safety hazard for the workers involved in remediation activities in the trench." The PAM draft states that a decision has been made to use conventional excavation equipment. A track mounted excavator, backhoe and/or front-end loader would be used to excavate the trench. Based on the earlier recommendation to the STCG for a technology need, what factors were used to determine that standard excavation equipment could be used to safely remediate this trench?

Response #1: Based on the conceptual model developed from the characterization of Trench 1, it has been determined that the remediation can proceed safely utilizing conventional excavation equipment operated within the prescribed safety envelope. The characterization of Trench 1 is based upon the following:

- compiling historical data from the Historical Release Report, supplemented with employee interviews to identify buried materials, potential contaminants, trench location, size, and configuration;
- aerial photographs, to identify disturbed areas, and verify trench dimensions and location, and determine time of operation;
- the unlikely scenario of discovering an intact drum remaining in the trench containing unoxidized depleted uranium metal;
- site visual surveys to identify physical features and establish a geophysical sampling grid;
- electromagnetic (EM) and ground penetrating radar (GPR) surveys to locate buried conductive and/or metallic objects and define trench boundaries; and
- soil gas surveys to identify and delineate potential contaminant plumes.

The safety envelope is being developed by a team of individuals with relevant knowledge and experience utilizing the Activity Control Envelope (ACE) process. In order to maintain an adequate safety envelope for the worker, the public, and the environment, the project is being designed and planned to address the potential for hydrogen accumulation within a drum, and a fire.

## **Recommendation #2:**

**The PAM states that characterization of the contents of the trench has not been performed. However, the Technology need document characterizes the Trench as having 84 to 125 drums of unoxidized, depleted uranium chips coated with lathe coolant and contaminated with inert material buried under five feet of clean fill. The chips were packaged in 30 gallon drums and over-packed into 55 gallon drums with graphite in the inter drum space to protect the chips from oxidation. Additional materials buried in the trench include ten drums of cemented cyanide waste, metal turnings and residues from a distillation process. Contaminants such as perchloro-ethylene, acetone, toluene, bis(2-ethylhl)phthalate, arsenic and cadmium have been detected. Were the historical documents used by the Environmental Restoration Group to characterize the trench reviewed by Rocky Mountain Remediation Personnel in preparing the PAM?**

**Response #2:** While no intrusive studies have been performed within the trench boundaries, other methods have been utilized to characterize Trench 1. The Proposed Action Memorandum references several methodologies utilized to perform the Trench 1 characterization (see above). An extensive search and review of historical documentation, including memoranda, waste manifests, meeting notes, etc. was performed by Rocky Mountain Remediation Services (RMRS) personnel.

Additionally, a search was performed to identify and locate former workers with some knowledge of Trench 1. A luncheon with the former workers was hosted by RMRS in January 1997. Information obtained at the luncheon, and through other retiree interviews is invaluable, and has been utilized in the characterization and planning of the project.

## **Recommendation #3:**

**The pyrophoric nature of depleted uranium is a major concern. The draft PAM does not discuss in detail the potential for fire occurring or the safety measures that will be taken to prevent and/or extinguish a fire. This is important information for stakeholders.**

**Response #3:** A project specific emergency response plan is currently under development, and will be included as part of the Health and Safety Plan.

## **Recommendation #4:**

**The potential for explosion due to possible hydrogen buildup in the drums and the safety measures that are being planned to control this hazard should be detailed.**

**Response #4:** Refer to response #3. The Health and Safety Plan for the Trench 1 project will detail the safety measures planned to mitigate the hazards due to the explosion of a drum containing depleted uranium.

**Recommendation #5:**

**Given the high hazard of this remediation and risk to the workers, a technical work document should be prepared. The documents should contain detailed work and safety procedures and undergo an engineering review to ensure technical adequacy.**

Response #5: Several technical work documents are being developed. Each document is designed to detail and control certain aspects of the project. These documents include the Health and Safety Plan, the Auditable Safety Analysis, the Sampling and Analysis Plan, and the Field Implementation Plan. Each document will undergo an exhaustive review to ensure completeness and technical adequacy.

**Recommendation #6:**

**Ensure that project managers and all others in supervisory positions are highly competent and knowledgeable of remediation of pyrophoric materials.**

Response #6: All personnel on the project will be trained and knowledgeable in the safe handling of depleted uranium, and first response for pyrophoric metals fire fighting.

**Recommendation #7:**

**Performance monitoring wells need to be installed in the event that significant contaminated groundwater is found. This is necessary since the groundwater table occasionally reaches the level of the drums in the trench.**

Response #7: This contingency has previously been included in the PAM. Section 3.2 states, "If significant VOC-contaminated groundwater is identified during the project, post-closure groundwater monitoring may be required. Details of a proposed groundwater monitoring program would be described in the project Closure Report. The monitoring program would address both groundwater and potential surface water contamination."

**Recommendation #8:**

**A detailed presentation on the radiological screening to detect surface contamination and airborne radioactivity needs to be prepared. The presentation should include type of monitoring instruments to be used, how often they will be used, where they will be located, and how often they will be turned on.**

Response #8: The details for radiological monitoring and screening will be included in the Health and Safety Plan, presently being developed, and in existing RFETS procedures (ie. Radiological Operating Instructions, Site Radiological Control Manual). Refer to Section 3.3 of the PAM.

**Recommendation #9:**

Although Methylene chloride was detected in wells 2387, 12091, 1891, and 1791, the occurrence was determined to be a common laboratory and sampling analytical contaminant. The PAM states that the contaminant is not known to have been used extensively as a solvent at RFETS and, therefore, the amount in these wells is determined to be a result of laboratory contamination. The Methylene Chloride was not considered to be an indicator for groundwater contamination even though it is measured in all four wells above the Tier II Action Levels. The Task 5 Chem Risk Project Report 1994, entitled "Estimating Historic Emissions from RFETS 1952-1989" states that in 1974 there was a Methylene Chloride inventory of 2.2 tons, and that between 1953 and 1974 between 3 and 15 tons were ordered per year. The solvent use was significant before 1974. The emission rate equaled 3.3 tons per year. An inventory completed in 1988-89 showed 0.31 tons at the site. Additionally, the solvent is listed as being present in buildings 123, 440, 559, 771, 881, and T452B. Based on this information, it is recommended that the decision to dismiss Methylene Chloride as an indicator of groundwater contamination be revisited, and that the groundwater in this area be listed for remediation.

Response #9: Since methylene chloride is a common laboratory contaminant, and it is not believed to have been utilized within Building 444, it was not selected as a contaminant of concern for Trench 1. Additionally, groundwater contamination in the vicinity of Trench 1 is believed to originate from two primary sources, the Mound, and the 903 Pad. These sites are also selected for remediation.

**Recommendation #10:**

**Monitoring before and after earth moving activities should be enhanced to include monitoring during the time the activity is taking place.**

Response #10: Air monitoring will be performed utilizing the existing RFETS Radioactive Ambient Air Monitoring Program (RAAMP) system which includes a series of permanent air monitoring stations throughout the plant site, including some off-site locations. The RAAMP system is utilized to track the RFETS site emissions, and specific RAAMP monitoring stations will be utilized to monitor and track project emissions. Additionally, a series of project site air monitors (hi-volume and low-volume samplers) will be utilized at the project boundaries to monitor daily activities. Wind speed and direction will be monitored during field activities and particulate and dust perimeter monitoring will be performed in accordance with RFETS procedures. Monitoring of volatile organic compounds around the site perimeter will be performed as described in the project Health and Safety Plan.

**Recommendation #11:**

**Both the U.S. Department of Energy and Kaiser Hill incorporate the lessons learned from the T3/T4 trench remediation into the T1 project. Any releases from the excavation should be reported to the City as soon as possible.**

**Response #11:** All releases will be reported in accordance with the project specific emergency response plan, and existing Site procedures.